Earth on fire

climate change from a philosophical and ethical perspective

Gjerris, Mickey; Gamborg, Christian; Olesen, Jørgen Eivind; Wolf, Jakob

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Mickey Gjerris,
Christian Gamborg,
Jørgen E. Olesen
Jakob Wolf (Eds.)

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Edited by
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Content

Foreword to the English edition
Mickey Gjerris 9

Introduction
Mickey Gjerris 11

The climate is changing – but why?
Jørgen E. Olesen 17

What will happen?
Scenarios of the future
Jørgen E. Olesen 37

Climate science – how did it come about?
Matthias Heymann 55

What is climate science all about?
Philosophical perspectives
Matthias Heymann, Peter Sandøe & Hanne Andersen 69

The price of responsibility – ethical perspectives
Christian Gamborg & Mickey Gjerris 89

A religious perspective on climate change
Jakob Wolf 115

The climate debate's debating climate
Polarisation of the public debate on climate change
Gitte Meyer & Anker Brink Lund 135

Case 1 ■ Biofuels

Biofuels – Crops for food and energy

Claus Felby 163

Biofuels: Hunger, subsidies and lack of effect on CO2 emissions

Christian Friis Bach 169

Study questions 173

Case 2 ■ Genetically modified organisms

GMOs: A solution to changed climate conditions

Preben Bach Holm 175

GMOs: The right way of taking responsibility?

Rikke Bagger Jørgensen 182

Study questions 189

Case 3 ■ Trading in CO_2 quotas

CO2 trading. A cost-efficient tool to achieve political goals?

Alex Dubgaard 191

CO2 trading. Should you be able to buy your way out of the problems?

Peder Agger 200

Study questions 207

Further reading 209

About the authors 215

Index 219

Foreword to the English edition

MICKEY GJERRIS

This book is about climate change and what it does to us and our planet. But even more it is about the philosophical and ethical challenges that arise from the changing weathers. The book was originally written for Danish students by Danish researchers, but just as global warming is a global phenomenon so is the questions that are put forth here. The book has therefore been translated into English so as to make it available for a wider audience

The English online version is free for all to use. All we ask you is that you share the existence of the book with your colleagues and fellow students so that as many as possible might benefit from it.

Should you have any comments or ideas for improvements to the next edition, please mail Mickey Gjerris at mgj@life.ku.dk.

The editors would like to thank Forlaget ALFA and our editor Jeanne Dalgaard for their generous permission to translate the original text and their good cooperation throughout the process. Furthermore we would like to thank Oversætterhuset A/S for their efficient work with the translation and Annette Larsen for her help. Finally we would like to thank Theme Cluster 1 and The Institute of Food and Resource Economics from the University of Copenhagen and the University of Aarhus for their economic support to this translation.

Introduction

MICKEY GJERRIS

The Earth is on fire. Our world is getting warmer, and the climate is changing. There is a lot to suggest that this is due to how we are using the Earth's resources. Also, it is a matter of urgency if we want to be able to exercise just a modicum of control over what the future will bring. So, in a manner of speaking, the Earth is getting too hot under our feet. We need to find out what is behind the climate change, but we also need to find a solution – fast.

At least that is how things stand at the moment. Just a few years ago, however, many scientists, politicians and laymen still questioned whether the climate was in fact changing, let alone whether human activities had any role to play. How could it be that all this doubt evaporated, and that everyone suddenly started talking about the climate and marketing themselves on low CO_2 emissions? A significant shift has occurred. Today, very few people question that climate change is happening and that it is largely due to human activity. Have we arrived at a new scientific certainty, or is it the result of a less transparent process where ethical values and political considerations have come to influence the scientific agenda? How definite actually are the climate models on which we are basing our actions, and how much of the discussion about them is science and how much relates to the ethical and philosophical considerations which have shaped them?

It is not absolutely clear what will happen with the climate in the coming years, but there is general agreement that the world will change. And man has started to prepare for these changes. This gives rise to important ethical questions. What must we do, who must we consider, and what does the natural world mean in an ethical sense? Should we save endangered species for their own sakes or for ours? Should we help the people who will benefit most from our help or those that most need the help – and do we in fact have a duty to help anybody apart from ourselves? Major changes threaten – and the solutions risk being rushed through without careful consideration. That's what happens when the Earth suddenly gets too hot under one's feet.

This book is about climate change, one which will contribute to our understanding of what is happening and why it is happening. The objective is to show how climate change raises not only a number of questions to do with natural science, but also many questions of a more universal nature

that are based on philosophical, political, ethical and religious assumptions about how the world *is* and how it *should* be. We hope that this book will encourage critical reflection and ethical consideration of what is happening, why it is happening and what we ought to do. Because something is happening:

James A. Hansen, as head of NASA's Goddard Institute for Space Studies and one of the world's leading climate researchers, is one of those who repeatedly points out that the situation is far more serious than we are willing to acknowledge. According to him, the targets for CO_2 reductions which have been set in the international agreements which applied for 2008 already exceed what is necessary to stabilise the situation. According to Hansen we must act far more effectively and radically – and we must take action now. In a speech given to *The National Press Club* in Washington DC on 23 June 2008, he said:

> Changes needed to preserve creation, the planet on which civilisation developed, are clear. But the changes have been blocked by special interests, focused on short-term profits, who hold sway in Washington and other capitals. I argue that a path yielding energy independence and a healthier environment is, barely, still possible. It requires a transformative change of direction in Washington in the next year.
>
> (Hansen, 2008)

Research published in winter 2008 by the Canadian geophysicist David Barber suggests that, by 2015, the Arctic will be ice-free during the summer. Whether this happens in 2015, 2025 or 2035 is, in this context, fairly irrelevant. What is important is that the temperature increases on the planet seem to be having quite an impact and that things are developing at a pace which, time and again, takes the scientists by surprise. The climate and the factors which have a bearing on it are complex. Often, individual scientists only see part of the picture, but when the various factors start reinforcing each other, the whole picture suddenly changes. In the past eight to ten years, the possible climate changes have led to worried minds and international agreements which have not really put the big players under any sort of obligation and to the setting of national targets which have basically been ignored in practical politics. The general consensus is that we can no longer afford such procrastination. Things are hotting up now – really hotting up. So we need to both act fast and think carefully about what we are doing.

This book is primarily intended as a textbook in ethics and science theory at university level, where it can be used on all study programmes to provide

recurrent case material. The more technical chapters can be used depending on the field of study. The book can also be used as a source of background information for upper-secondary school teachers and other teachers in the educational system and as a study book by reading groups, or simply by readers who want to understand what the climate debate is all about. The book is the result of scientists from many different fields and institutions collaborating together, which is evident from the author presentations at the back of the book. The breadth of expertise clearly reflects the radical significance of climate change for the future. Climate change literally cuts across all boundaries. It is the hope of the editors that this broad approach will contribute to understanding the complexity of the problems and a healthy level of scepticism towards any over-simplified messages in the climate debate.

The book consists of seven chapters which show how the climate changes are rooted in our scientific, philosophical, political, ethical and religious understanding of the world. Chapters 1 and 2 are written by the climate scientist and member of the UN climate panel Professor Jørgen E. Olesen from Aarhus University. The first chapter describes the changes which the climate is undergoing, which physical, chemical and biological mechanisms are interacting to cause climate change, and what is driving the changes. The second chapter looks at the consequences of climate change for life on Earth both generally and specifically for a number of areas such as agriculture, infrastructure and urban planning. The book's third chapter is written by the science historian Matthias Heymann from Aarhus University. This chapter puts the present discussion about climate research into a historical perspective and shows how climate research has always been embedded in philosophical and political discussions.

Matthias Heymann has also been involved in Chapter 4, this time with the philosopher Peter Sandøe from the University of Copenhagen and the science theorist Hanne Andersen from Aarhus University. Together they describe the science-theoretical challenges raised by the use of computer models in climate research, and seek to show how scientific uncertainty also becomes a political issue. Chapter 5 is written by the ethicist Mickey Gjerris and the natural resource ethics researcher Christian Gamborg, both from the University of Copenhagen. The chapter focuses on the ethical dilemmas presented by climate change as far as mankind is concerned as well as in relation to the natural world in general. In Chapter 6, the theologian Jakob Wolf, also from the University of Copenhagen, looks at climate change from a religious perspective, and offers his views on how religion, broadly speaking, can help to fight climate change. Finally, in Chapter 7, senior lecturer

and journalist Gitte Meyer from the University of Copenhagen and professor in media management Anker Brink Lund from Copenhagen Business School write about the political discussion about the climate which has dominated the media over the past twenty years, and put this discussion into a broader context concerning the role of science in the current debate.

The seven chapters can be read independently of each other, but as they each have something to offer, reading them all will provide a solid foundation from which to relate to climate change. The chapters are written as textbook chapters, and thus provide a general introduction to the issues from what is hopefully a neutral perspective. Nonetheless, it is important to note that the chapters are written by different researchers, each of whom possesses expertise within their particular field. The various chapters are therefore, unavoidably, coloured by their respective views. This basic condition for all communication should make the reader take a critical approach to the chapters and not be seduced by what is presented as obvious conclusions. These chapters are not the final answer to anything, but invite the reader to participate in a broader discussion about climate change.

At the end of the book, three actual cases from the climate debate are discussed: CO_2 trading, GM crops and biofuels. These cases are addressed by experts who have played a prominent role in the public debate of these topics. What all three cases have in common is that they describe controversial solutions to problems resulting from climate change. The purpose of these cases is partly to present some of the more controversial strategies for countering climate change to the reader, and partly to show how the ethical and philosophical issues on which the seven main chapters centre can be used as 'keys' to understanding the disagreements that arise when discussing some of the most important issues currently faced by mankind. Each case is preceded by various working questions which can be used as a starting point for a discussion of the case and as a way of focusing on the ordinary problems that lie behind the specific differences of opinion.

Each chapter is followed by a list of the references which have been used as background material. These can be used as inspiration for further reading. There is also a list at the back of the book of commented suggestions for further reading, organised by chapter. The intention is that students and others will easily be able to find further literature for project work, studies etc.

The editors would like to thank all the contributors for their time, Jeanne Dalgaard from the publishers Alfa for her good and thorough editing, and a number of Danish financial contributors who have made the publication of this book possible: 1: Torben & Alice Frimodts Fond 2: Direktør Einar

Hansen og hustru fru Vera Hansens Fond 3: Institute of Food and Resource Economics, University of Copenhagen 4: Faculty of Life Sciences, University of Copenhagen 5: Faculty of Agricultural Sciences, Aarhus University.

The changes we face are both alarming and far-reaching. They will have a major impact on our lives. In order to meet this challenge, it is necessary that we understand both the scientific details and the broader contexts of the different problems. Technical solutions detached from the social reality into which they must be incorporated cannot solve these problems, just as theoretical musings on background, causes and values are of no use in the present situation. However, if we gather the threads and endeavour to tackle the task based on a high level of expertise and sound knowledge about the context of the problems, we believe there is every possibility that the huge challenges we face can be resolved. We hope that this book will make a small contribution to this task.

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Hansen JA: *Global Warming Twenty Years Later: Tipping Points Near (2008)*.http://www.columbia.edu/ffijeh1/2008/TwentyYearsLater_20080623.pdf

Further reading

Jørgen E. Olesen: The climate is changing – but why?

Solomon S, Qin D, Manning M, Chen Z, Marquis M, Averyt KB, Tignor M & Miller HL (eds.) (2007): *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, UK.
The IPCC's authoritative review of the causes of climate change, historical climate change and global as well as regional climate change projections. The report summarises the research conducted within the area in recent years. It is a comprehensive report but an executive summary briefly describes the main trends. The report can be downloaded from http://www.ipcc.ch.

Houghton J (2004): *Global warming. The complete briefing*. Cambridge University Press.
John Houghton has previously chaired the IPCC's Working Group I. He has also headed one of the world's leading climate research centres (the Hadley Centre in the UK). In this book, he provides a relatively simple yet wide-ranging description of climate change, its causes, consequences and what can be done to counter it.

Jørgen E. Olesen: What will happen? Scenarios for the future

Parry ML, Canziani OF, Palutikof JP, van der Linden PJ & Hanson CE (2007): *Climate change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge.
The IPCC's authoritative review of observed consequences of climate change, vulnerability to these, effects of climate change on ecosystems and society as well as the opportunities for adaptation to climate change. The report summarises the research conducted within the area in recent years. It is a

comprehensive report but an executive summary briefly describes the main trends. The report can be downloaded from www.ipcc.ch.

Fink AH, Brücher T, Krüger A, Leckebusch GC, Pinto JG & Ulbrich U (2004): The 2003 European summer heatwaves and drought – Synoptic diagnosis and impact. *Weather* 59, pp. 209-216.
This article provides an insight into the future by looking at an event in the past. There is every reason to believe that the heatwave in 2003 was an early warning of what we can expect. The article describes the meteorological conditions for the heatwave as well as its many negative consequences.

Stern N (2007): *The economics of climate change: The Stern review*. Cambridge University Press, Cambridge. p. 602.
Sir Nicholas Stern is Head of the UK Government Economic Service. His review of the economic consequences of climate change compared to what it will cost to counter the climate change was the first serious attempt to assess the economic consequences of climate change.

Matthias Heymann: How did climate research begin?

Randall DA (ed.) (2000): *General Circulation Development, Past Present and Future: The Proceedings of a Symposium in Honor of Akio Arakawa*. Academic Press.
This book contains a number of detailed contributions on the history of climate modelling written by the scientists involved as well as a very useful overview written by the science historian Paul Edwards.

Fleming JR (1998): *Historical Perspectives on Climate Change*, Oxford University Press.
JR Fleming is one of the leading experts within the history of climate sciences. This book traces the idea of climate change back to the beginning of the nineteenth century in contributions from Tyndall, Arrhenius, Callender and many others.

Heymann M (2009): Zur Geschichte der Klimakonstruktionen von der klassischen Klimatologie zur modernen Klimaforschung. *NTM. Zeitschrift für Geschichte der Wissenschaften, Technik und Medizin.*
This is a summary article analysing how understanding the climate has changed from being a static and local concept within climatology to being a dynamic and global concept within climate science.

Weart S (2003): *The Discovery of Global Warming*. Harvard University Press.
Spencer Weart is the leading science historian within the development of climate sciences since World War II. In this book, he reconstructs in detail the many discoveries and debates that have led to the current knowledge of climate change. A more detailed account of the history of climate science can be found at http://www.aip.org/history/climate/, which is regularly updated.

Matthias Heymann, Peter Sandøe & Hanne Andersen: What is climate science all about? Philosophical perspectives

Giere RN, Bickle J & Mauldin R (2006): *Understanding Scientific Reasoning*, 5th edition, Cengage Learning.
This textbook provides a detailed account of how to understand and assess scientific models. The book contains a large number of cases and also has some exercises.

Humphreys P (2004): *Extending ourselves: Computational science, empiricism, and scientific method*, Oxford.
This book provides a detailed account of philosophical questions related to the use of computer simulations within different scientific fields.

Lahsen M (2005): Seductive simulations? Uncertainty distribution around climate models. In: *Social Studies of Science* 35, pp. 895-922.
This article is an account of how researchers handle the uncertainty related to climate modelling, how they assess it and how they become accustomed to it.

Miller CA & Edwards PN (ed. (2001): *Changing the Atmosphere. Expert Knowledge and Environmental Governance*. MIT Press.
This anthology contains quality contributions on different aspects of climate research and climate modelling aspects. Paul Edwards provides a useful overview of how climate modelling is actually performed.

Petersen A (2006): *Simulating Nature: A philosophical study of computer simulation uncertainties and their role in climate science and policy advice*, Antwerpen.
This book is a detailed account of uncertainties related to climate modelling, how these uncertainties are handled and their importance in connection with policy advice.

Shackley S, Young P, Parkinson S & Wynne B (1998): Uncertainty, complexity and concepts of good science in climate change modelling: Are GCMs the best tools? In: *Climatic Change* 38, 159-205.
This article is a critical account of climate modelling and the problems related to this. The article gave rise to a controversial discussion on the use of climate models.

Mickey Gjerris & Christian Gamborg: The price of responsibility – ethical perspectives

Blackburn S (2001): *Being Good. A Short Introduction to Ethics*. Oxford University Press.
The book starts out by answering the question of why it makes sense at all to talk about ethics in our time and then relates the most used ethical theories and concepts to a number of basic experiences such as life, death, happiness, sorrow, selfishness etc.

Garvey J (2008): *The ethics of climate change. Right and wrong in a warming world*. Continuum.
The book provides an overview of climate change – not as a scientific problem but as a moral challenge. The book is about how you can consider climate change from an ethical point of view and about choices and responsibility.

Des Jardin J (2000): *An Introduction to Environmental Philosophy*. Wadsworth Publishing.
Now in its third edition, this book is one of many which provide an introduction to environmental ethics. In addition to describing the basic ethical concepts, it also gives an introduction to central positions within environmental ethics. The strength of the book is that it relates theory to a number of practical environmental examples and examples from the natural world, including the climate.

McIntosh A (2008): *Hell and High Water. Climate Change, Hope and the Human Condition*. Birlinn
The book contains a straightforward account of the development in the past 15-20 years and a comprehensive discussion of the relationship between political and personal responsibility. Its conclusion is that the crisis is so overwhelming that only deep spiritual changes will give us the courage to change our lifestyle as fundamentally as is required to prevent climate change from threatening our existence.

Jakob Wolf: A religious perspective on climate change

McFague S (2008): *A New Climate for Theology: God, the World and Global Warming*. Fortress Press.
As a criticism of a market system with excessive growth, McFague's book presents her alternative idea of a fair and sustainable economy. She argues that the background for such an alternative economic order is that human identity is a relational identity as part of a universe which develops while expressing divine love and human freedom.

Primavesi A (2008): *Gaia and Climate Change. A Theology of Gift Events*. Routledge.
Based on James Lovelock's Gaia theory, which perceives the Earth and its life as one big ecosystem, and the preaching of Jesus as a gift theology which sees God as the forgiving and generous God, Primavesi reflects on how we should address the challenge of climate change.

Gitte Meyer & Anker Brink Lund: The climate debate's climate debate: Polarisation in the public debate on climate change

Arendt, Hannah: *The Human Condition*.
The German-Jewish thinker, Hannah Arendt, was concerned with the conditions for human action and, thus, for political life. The chapter on the debating climate of the climate debate has to a large extent been inspired by her writings. The Human Condition, originally published in 1958 is one of her crucial works. Published for instance by The University of Chicago Press.

Crick, Bernard: *In Defence of Politics*
Reprinted over and over, since it was published for the first time in 1962, this is an easily read defence of politics, discussing the relationship of politics with ideology, democracy, nationalism and technology. Crick advised the British Home Office for many years on issues of education for citizenship. Published most recently by Continuum.

Gadamer, Hans-Georg: *Reason in the Age of Science*; *Praise of Theory: Speeches and Essays.*
These two collections of brief and rather easily read essays by the German philosopher Hans-Georg Gadamer discuss what form reasoning about life and society can take in a culture permeated by scientific and technical modes of thought and how to delimit the use of science in reasonable ways. Published for instance by MIT Press and Yale University Press.

Habermas, Jürgen: *The Structural Transformation of the Public Sphere. An Inquiry into a Category of Bourgeois Society.*
A modern classic on conditions and possibilities for public discussion and on the history of the public sphere. Originally published in 1962 in German, it was only translated into English in 1989. An important book, but not easily read. Its history of interpretation has suffered by difficulties with respect to the translation of concepts from German to English. Pulished for instance by MIT Press.

Mill, John Stuart: *On Liberty.*
A modern classic, this essay was first published in 1859. In the essay the British philosopher John Stuart Mill concerned himself with the dangers relating to a tyranny of the majority. Published for instance in Gray, John: On Liberty and Other Essays (pp. 1-128) Oxford: Oxford University Press, 1998.

About the authors

■ **Peder Agger:** MSc in Biology from University of Copenhagen in 1966. Has worked at the Danish Institute for Fisheries Research as a fisheries biologist, as Associate Professor and later Professor in Environmental Planning at Roskilde University and for seven years as Head of the Nature Division of the Danish Forest and Nature Agency. Over the years, he has chaired the Danish Nature Conservation Council, the Danish Ecological Council and is now Chairman of the Danish Council of Ethics. His main interests are nature management and nature politics.

■ **Hanne Andersen:** Associate Professor in History of Science and Theory of Science at the Steno Department for Studies of Science and Science Education, Aarhus University. MSc in Physics (major) and Comparative Literature (minor) from University of Copenhagen in 1992 and PhD from Roskilde University in 1998. Her research area is science theory with special focus on issues relating to the development of science. Historical case studies of modern natural science are thus also an important part of her research activities.

■ **Christian Friis Bach:** International Director of DanChurchAid. He has previously worked as Associate Professor in International Economics, been Chairman of MS Danish Association for International Co-operation and worked as a journalist at Danmarks Radio. In addition, he has worked as a consultant for, amongst others, the World Bank, the EU and Danida. In his spare time, Christian Friis Bach has been an active member of a number of organisations, ranging from the WWF to Amnesty International. He was one of the driving forces behind the establishment of Max Havelaar and the Danish Ethical Trading Initiative.

■ **Alex Dubgaard**: Associate Professor in Environmental Economics at the Institute of Food and Resource Economics and Head of the Environmental Economics and Rural Development Division, University of Copenhagen. Alex Dubgaard's work focuses in particular on economic regulation instruments and cost-benefit analysis within the aquatic environment and climate area. He has, among other things, carried out environmental economic analyses for Danish public authorities and EU institutions, including con-

sequence analyses of the proposal for an EU soil framework directive as well as the EU's proposal for a climate and energy package.

■ **Claus Felby:** Professor in Wood and Biomass Technology at the Faculty of Life Sciences, University of Copenhagen. His research activities centre on the use of biomass for energy, feed and materials. He has focused in particular on the connection between the chemical and physical structure of various crops and their applicability in the production of sugar and subsequent conversion into biofuels and feed. He has previously been employed in the biotech industry in Denmark and the USA. Claus Felby heads the Faculty's 'Fuel for Life' research initiative within the development of sustainable bioenergy.

■ **Christian Gamborg:** PhD, Senior Researcher at the Centre for Forestry, Landscape and Planning, Faculty of Life Sciences, University of Copenhagen, and is permanently affiliated with the Danish Centre for Bioethics and Risk Assessment (CeBRA). Since 1998, he has mainly conducted research – of which a large part is funded by the EU – into ethics, science theory and stakeholder analysis in relation to forestry and agriculture, landscape architecture, nature management and modern biotechnology. He teaches a number of courses at BSc and MSc level within these subjects and is a frequently used guest lecturer.

■ **Mickey Gjerris:** PhD, Theologian. Associate Professor at the Institute of Food and Resource Economics, Faculty of Life Sciences, University of Copenhagen, and is permanently affiliated with the Danish Centre for Bioethics and Risk Assessment. His research interests include nature ethics, bioethics, ethics, nanotechnology and animal ethics. He has previously edited the following books (in Danish) 'Naturens sande betydning' (2001), 'Spor i sandet' (2002) and 'Hvad er meningen?' (2008). He teaches ethical and science theory subjects and gives many lectures outside the safe walls of the university.

■ **Matthias Heymann:** Associate Professor in Technology History at the Department of Science Studies, Aarhus University. He works with the history of environmental science and technology history and has published books on the use of wind power in the twentieth century, liquid natural gas and engineering design in a historical perspective. He is about to publish a book on the historical aspects of hydrogen as an energy carrier. He is currently conducting research into the history behind the use of computer

models in environmental science and in the production of and change in our knowledge of the environment.

■ **Preben Bach Holm**: Biologist, PhD and DSc from University of Copenhagen. From 1973 to 1988, he worked at the Carlsberg Research Center conducting basic studies of sex cell formation in plants and animals, but switched to plant biotechnology and genetic engineering of barley in 1988. In 1996, he moved to the Danish Institute of Agricultural Sciences with the task of establishing a plant biotechnology team at Flakkebjerg Research Centre. Today, he is Professor and Head of Research at the Faculty of Agricultural Sciences, Aarhus University, and is heading a team working with plant genetics and biotechnology in grasses, barley and wheat. The main purpose of these research activities is to improve the nutritional value of these crops as feed and food for humans.

■ **Rikke Bagger Jørgensen:** Senior Researcher, PhD in plant genetics and biotaxonomy. She is working on projects within the following areas: The effects of climate change on biodiversity and plant production, the effects of genetically engineered organisms on the environment, risk assessment, gene dissemination and the co-existence of GM farming and non-GM production. A member of, e.g., the Danish Council of Ethics and the Nordic Committee on Bioethics.

■ **Anker Brink Lund:** Has a background in political science and has in particular focused on political communication, the media and journalism. He is D.phil. in Strategic Communication from Roskilde University and Professor in Media Management at the International Center for Business and Politics, Copenhagen Business School.

■ **Gitte Meyer:** Worked as a journalist specialising in the debate on science and technology-related topics for more than 25 years. In 2004, she defended her PhD thesis titled: *Offentlig fornuft? Videnskab, journalistik og samfundsmæssig praksis*. She is an Associate Professor and affiliated with the Danish Centre for Bioethics and Risk Assessment.

■ **Jørgen E. Olesen**: Research Professor at the Department of Agroecology and Environment, Faculty of Agricultural Sciences, Aarhus University. He conducts research into the interplay between climate and agriculture focusing on both the emissions of greenhouse gases from agriculture and on how agriculture best adapts to climate change. Thanks to his participation in

research projects, committees and commissions, he has many international contacts. He is a member of the UN's Intergovernmental Panel on Climate Change (IPCC), which earned him a share in the Nobel Peace Prize in 2007. He is also a member of the Danish Commission on Climate Change Policy, the Board of Representatives of the Danish Board of Technology and the Coordination Forum for Climate Change Adaptation Research.

■ **Peter Sandøe:** Holds an MA in Philosophy. Has since 1997 worked as Professor in Bioethics at the Faculty of Life Sciences, University of Copenhagen (formerly the Royal Veterinary and Agricultural University). Also heads the interdisciplinary Danish Centre for Bioethics and Risk Assessment. Has published a large number of articles and books on ethical issues in relation to animals, agriculture and food.

■ **Jakob Wolf:** MA in Theology in 1978, PhD in 1984, Doctor of Theology in 1990. Parish parson in Lumsås/Højby from 1983-95. Has since 1995, worked as an Associate Professor in Ethics and the Philosophy of Religion at the Department for Systematic Theology, University of Copenhagen. His research activities have in particular focused on the relationship between nature and ethics and religion. In addition to a large number of articles on these themes, he has also published the doctoral thesis: *Den farvede verden – Om Goethes farvelære, Hans Lipps' fænomenologi og K.E. Løgstrups religionsfilosofi* (1990), *Etikken og universet* (1997), *Den skjulte Gud – Om naturlig teologi* (2001), *Rosens råb – Intelligent design i naturen. Opgør med darwinismen* (2004) and *Naturlig kærlighed – Kritik af pligtetik og nytteetik* (2007).

Index

Affluent 91
Agriculture 13, 38, 40, 42, 46, 47, 49, 50, 58, 164, 165, 166, 170, 175, 176, 177, 181, 216, 217, 218
Antarctica 41, 105, 106
Anthropocentrism 98, 99, 101, 107
Anthropogenic 17, 31, 33, 34, 38, 40, 52, 86, 110, 112, 115, 118, 119, 135, 191
Arctic 12, 18, 28, 32, 39, 40, 45, 89, 105, 120, 139
Atmosphere 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 33, 46, 47, 55, 56, 57, 58, 59, 60, 61, 63, 64, 65, 66, 73, 76, 78, 81, 101, 119, 163, 178, 191, 201
Biocentrism 98, 101, 102
Biodiversity 45, 46, 50, 111, 112, 164, 182, 202, 205, 217
Bioethanol 165, 166, 167, 169, 172, 176, 185
Biofuel 14, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 177, 216
Biomass 128, 163, 164, 165, 166, 168, 171, 172, 198, 216
Breeding 167, 175, 176, 179, 180, 183, 186
Brundtland Report, the 18, 99, 106
Carbon dioxide 21, 23, 25, 55, 56, 58, 63, 64, 65, 75, 77, 178, 200, 201
Carteret Islands, the 89, 103, 104, 105
Charity 116, 120
Climate debate 13, 14, 26, 135, 136, 137, 142, 145, 148, 151, 153, 156, 157, 158, 213
Climate model 11, 26, 29, 30, 32, 35, 46, 64, 65, 69, 71, 72, 73, 74, 75, 76, 77, 78, 80, 81, 82, 86, 135, 146, 147, 211, 212
Climate refugees 89, 90, 103, 104
Climate research 13, 62, 84, 140, 142, 209, 210, 211
Climate simulation 64, 72, 73, 76
Climate system 18, 22, 25, 26, 30, 32, 35, 70, 78
Climatology 57, 58, 59, 60, 61, 62, 65, 211
CO_2 trading 14, 191, 193, 194, 195, 196, 197, 198, 200, 204, 205, 207
Computer model 13, 62, 64, 69, 71, 72, 73, 76, 77, 78, 79, 81, 144, 216
Consensus 12, 27, 82, 83, 84, 85, 141, 142, 144, 152, 153, 154, 155, 157, 159, 167
Creation 12, 84, 116, 129, 130
Critical 12, 14, 83, 91, 102, 142, 147, 148, 149, 175, 201, 203, 212
Crops 14, 39, 41, 43, 47, 48, 50, 54, 99, 103, 163, 165, 166, 167, 170, 171, 175, 176, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 216, 217
Data 58, 59, 60, 61, 63, 72, 75, 76, 77, 78, 79, 80, 81, 82, 84, 135, 141, 154, 204
Day of Judgement, the 115
Democracy 37, 112, 143, 145, 204
Deontology 95, 105
Dialogue 95, 137, 138, 205
Doubt 11, 34, 46, 50, 93, 95, 118, 129, 145, 146, 148, 154, 156, 183, 191
Drought 17, 19, 27, 32, 33, 35, 40, 41, 42, 43, 44, 47, 48, 49, 51, 53, 54, 94, 102, 178, 180, 182, 183, 210
Duty 11, 105, 106, 112, 120, 121, 122, 124, 125
Ecocentrism 98, 101
Economy 31, 78, 83, 168, 170, 171, 172, 179, 186, 187, 192, 196, 199, 202, 203, 204, 205, 213
Ecosystem 37, 39, 42, 45, 50, 94, 96, 101, 102, 103, 110, 111, 163, 185, 209, 213
empirical 29, 56, 78, 79, 139
Empirical ... 56, 78, 79, 139
Energy 163, 165, 168, 172, 176
Environmental ethical considerations 98
Environmental ethicist 100
Environmental research 140, 141

Ethical subject 96, 97, 98, 99, 100
Ethics 91, 92, 100, 113, 118, 121, 122, 125, 126, 133, 212, 215, 217, 218
Extinct 37, 45, 46, 108, 110
Extinction 89, 91, 93, 96, 111
Fauna 20, 39, 45, 46, 100, 103
Flooding 33, 40, 41, 42, 43, 44, 48, 49, 51, 52, 53, 102
Food 39, 45, 46, 47, 48, 49, 53, 54, 85, 89, 93, 94, 97, 101, 102, 105, 106, 107, 128, 135, 141, 163, 164, 165, 166, 167, 168, 169, 170, 173, 175, 176, 177, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 202, 217, 218
Food production 46, 47, 48, 49, 94, 163, 164, 165, 166, 167, 175, 177, 180, 182, 184, 189
Forestry 39
Fossil fuel 23, 31, 102, 104, 105, 135, 149, 163, 171, 191
Genetic engineering 179, 217
GM crop 14, 179, 181, 183, 184, 185, 186, 187
Greenhouse effect 19, 20, 21, 23, 24, 26, 31, 33, 55, 56, 191, 195, 198
Greenhouse gas 17, 18, 21, 22, 23, 24, 25, 26, 27, 30, 31, 32, 33, 34, 35, 37, 38, 39, 56, 58, 76, 81, 119, 138, 144, 149, 167, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 202, 204, 217
Guilt 104, 105, 124, 125
Health 40, 42, 51, 52, 58, 94, 117, 122, 148, 151, 153, 158, 179, 180, 186, 202, 204
Holistic 57, 60, 100, 111, 165
Ice age 25, 27, 28, 29, 139
Invasive species 52, 108
IPCC 17, 18, 19, 29, 30, 31, 33, 38, 41, 56, 66, 67, 77, 82, 83, 84, 85, 86, 141, 142, 155, 164, 177, 182, 187, 209, 218
Justice 131, 173
Kyoto Protocol, the 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 207
Love 116, 120, 121, 122, 123, 124, 125, 128, 213
Mean temperature 17, 19, 21, 34, 39, 40, 41
Measurement 19, 20, 25, 59, 66, 73, 79, 80, 81, 138
Meteorology 59, 60, 70, 71, 138
Moral 102, 113, 116, 119, 120, 121, 122, 123, 135, 136, 185, 199, 212
Motivation 118, 124, 131
Nature 11, 34, 50, 64, 69, 70, 98, 99, 101, 111, 112, 117, 122, 123, 129, 130, 150, 153, 156, 195, 203, 205, 215, 216, 218
Nature preservation 112
Objective 11, 83, 93, 95, 131, 132, 164, 165, 167, 191, 195, 196, 199, 203
Peer review 83, 84
Philosophy of science 83
Plant production 176, 177, 178, 179, 181, 217
Plant species 52, 99, 108, 128, 179
Politics 12, 69, 82, 85, 86, 117, 131, 132, 136, 137, 138, 140, 141, 142, 143, 144, 145, 149, 151, 153, 155, 156, 158, 170, 185, 202, 203, 204, 215
Pollution 24, 45, 100, 135, 182, 191, 193, 194, 195, 198, 199, 205
Poor, the 44, 53, 89, 91, 94, 103, 116, 119, 121, 124, 132, 167, 169, 170, 172, 176, 178, 182, 185, 199
Population growth 31, 176
Precipitation 17, 19, 22, 27, 32, 33, 35, 38, 40, 47, 51, 55, 58, 73, 178
Prioritisation 191, 204, 205
Quota 191, 192, 194, 195, 196, 200, 201, 203, 207
Radiation balance 19, 21, 22
Reduction cost 193, 194, 195
Religion 13, 115, 116, 118, 119, 120, 125, 128, 130, 131, 132, 143, 144, 152, 218
Religious 12, 13, 91, 99, 111, 115, 116, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 143, 144, 146, 213
Resource 11, 13, 30, 31, 41, 42, 44, 46, 53, 54, 94, 102, 103, 104, 120, 123, 136, 156, 157, 164, 165, 172, 185, 186, 195, 198, 203, 205
Responsibility 89, 90, 91, 92, 96, 104, 105, 107, 112,

119, 120, 121, 122, 127, 182, 187, 202, 212, 213
Rhetoric 120
Risk 11, 32, 33, 37, 38, 40, 42, 43, 44, 45, 46, 48, 49, 50, 52, 56, 82, 84, 85, 86, 102, 108, 119, 132, 157, 166, 172, 180, 181, 185, 186, 189, 217
Risk assessment 85, 86, 180, 185, 186, 217
Scepticism 13, 83, 84, 85, 145, 146, 147, 148, 153, 180, 189
Science 11, 12, 13, 14, 55, 57, 58, 59, 60, 64, 65, 66, 67, 69, 70, 71, 77, 79, 82, 83, 85, 86, 126, 128, 129, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 181, 203, 210, 211, 212, 215, 216, 217
Scientism 126
Sentientism 98, 101, 111
Species 11, 37, 45, 46, 48, 50, 52, 93, 94, 95, 96, 99, 100, 101, 102, 103, 105, 107, 108, 109, 110, 111, 119, 123, 124, 128, 175, 179, 182
Sunspots 26
Sustainability 106, 112, 142, 163, 164, 166, 168, 173, 185, 203, 204, 205
Sustainable development 44, 53, 182, 202, 203, 204, 205
Technological development 31, 119, 164, 166, 196, 202
Technology 18, 30, 31, 53, 59, 65, 66, 102, 111, 129, 138, 163, 164, 165, 166, 168, 175, 179, 180, 183, 186, 193, 196, 198, 207, 216, 217
Temperature 12, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 38, 39, 40, 41, 42, 43, 46, 47, 48, 49, 50, 51, 54, 55, 56, 57, 58, 63, 64, 65, 70, 73, 77, 78, 80, 81, 105, 108, 120, 138, 139, 177, 178, 182, 183, 187
Temperature change 22, 25, 26, 41, 56, 73, 80
Temperature increase 12, 17, 20, 22, 25, 26, 30, 32, 33, 41, 48, 51, 139, 177, 178
Theory 12, 27, 55, 56, 58, 59, 62, 71, 72, 76, 78, 79, 95, 100, 105, 108, 139, 141, 145, 152, 154, 198, 204, 212, 213, 215, 216
Theory of Science 215
Truth 17
Uncertainty 13, 19, 20, 24, 26, 30, 31, 34, 35, 46, 49, 71, 72, 73, 75, 81, 85, 86, 108, 135, 140, 141, 145, 146, 147, 148, 149, 154, 156, 157, 158, 204, 211, 212
UN, the 13, 17, 18, 99, 116, 118, 129, 132, 141, 142, 158, 159, 163, 177, 218
Utilitarianism 95
Validation 80, 81
Value 11, 15, 26, 32, 52, 69, 73, 79, 80, 81, 85, 91, 92, 93, 95, 96, 97, 99, 100, 101, 102, 107, 111, 112, 116, 117, 118, 123, 129, 130, 131, 146, 147, 165, 168, 173, 178, 186, 189, 203, 204, 205, 207, 217
Vulnerability 38, 54, 100, 209
Warming 9, 22, 23, 24, 26, 27, 32, 35, 41, 42, 46, 54, 55, 56, 77, 81, 85, 89, 101, 103, 106, 110, 111, 113, 118, 119, 120, 126, 130, 139, 148, 149, 150, 153, 209, 212
Water level 43
World view 126, 127, 128, 129, 130